

## ABSTRACT OF THE DISCLOSURE

A next-generation mobile communication system is disclosed, including a high-speed cell searching method and apparatus using a distributed sample acquisition scheme (DSA) and a differentially-coherent phase shift keying (DPSK)-based DSA (hereinafter referred to as D<sup>2</sup>SA) in a direct sequence code division multiple access (DS/CDMA) system. The high-speed cell searching apparatus uses the D<sup>2</sup>SA technique using the 2<sup>b</sup>-ary DPSK modulation instead of the quadrature modulation to simultaneously convey  $b$  ( $b \geq 1$ ) state samples for the SRG that generates the long-period PN sequences in the next-generation DS/CDMA system using the DSA technique, and employs the data constellation pre-rotation technique to provide the certainty of the channel estimation. A high-speed cell searching method using the apparatus is also provided.